

he gives a rate of a mile in about 8 days, presumably on a horizontal surface, while *Ancylus fluviatilis*, he tells us, has been recorded to travel at the rate of a mile in 2 years and 10 months. It seems doubtful whether any of our marine Gastropods will be found to excel *Ancylus* in the deliberateness of its movements, while it is not improbable that *Eolis drummondi*, on the level, might be found to rival the speed of the Limaces, since the observations recorded in these notes show that the Nudibranch can climb at the rate of a mile in about 9 days 18 hours. To compare the small things of the organic world with the great things of the inorganic, the quickest travel rate of *E. drummondi* is some 260 times as great as the summer motion of the central and most rapidly moving portion of that famous ice-stream, the Mer de Glace.

XLVII.—*Alcyonarians from the Gulf of Cutch*. By Prof. J. ARTHUR THOMSON and Mr. GEORGE CRANE, B.Sc., University of Aberdeen. (Preliminary Note.)

IN the course of an investigation of the shallow-water fauna of part of the Gulf of Cutch, Mr. James Hornell made a small collection of Alcyonarians which presents some features of interest. The precise district was the coast of Okhamandal, which forms the N.W. extremity of the Kattiawar Peninsula, and Mr. Hornell has called our attention to the fact that specimens of *Dendronephthya* (better known as *Spongodes*), of *Lophogorgia*, &c. could be collected at low tide.

The collection includes eight species, one of which—*Astromuricea stellifera*—is new. There is also a new variety of a remarkable species of *Echinomuricea* previously found in the Indian Ocean.

The position of the various species may be indicated as follows:—

Order ALCYONACEA.

- Family ALCYONIDÆ . . . (1) *Sclerophytum polydactylum* (Ehrenberg).
- Family NEPHTHYIDÆ . . (2) *Dendronephthya* (*Spongodes*) *dendrophyta* (Wright and Studer).
 (3) *Dendronephthya* (*Spongodes*) *brevirama* (Burckhardt).

Order AXIFERA.

- Family MURICEIDÆ . . . (4) *Astromuricea stellifera*, sp. n.
 (5) *Echinomuricea uliginosa*, Thomson
 and Simpson, var. *tenerior*, nov.

- Family GORGONIDÆ . . . (6) *Lophogorgia lutkeni*, Wright and
 Studer.
 (7) *Juncella juncea*, Pallas.

Order STELECHOTOKEA, Section PENNATULACEA.

- Family VIRGULARIDÆ . . (8) *Virgularia rumphii*, Kölliker.

(1) *Sclerophytum polydactylum* (Ehrenberg) is a well-known widespread species, previously reported from the Red Sea, Maldives, Gulf of Manaar, China Sea, Zanzibar, British New Guinea. It is characterized by the absence of siphonozoids, the small size of the autozooids, and the tough fleshy texture. The specimens from the Gulf of Cutch were large, the maximum dimensions being 5 cm. in height by 14 in length and 8 in breadth.

(2) *Dendronephthya* (*Spongodes*) *dendrophyta* (Wright and Studer), a species of the flattened umbellate type in Kükenthal's *dendrophyta* group, previously recorded from Philippines and China Sea. It is represented by loosely branched and close-set types of polyparium, as figured by Wright and Studer and by Kükenthal respectively; the anthocodiæ show the characteristic eight double rows of curved spicules, 4 or 5 in each row; a trivial feature, noted by Wright and Studer, namely the occurrence of numerous superficial x-shaped spicules on the branches, is very marked. The specimens were collected in the month of December, and they show abundant reproductive bodies—probably sperm-sacs—up to 0.25 mm. in diameter, attached to the mesenteric bands far below the polyp-stalks. Some specimens show a few small polyp-bearing twigs on the top of the stalk below the foliate branches.

(3) *Dendronephthya* (*Spongodes*) *brevirama* (Burckhardt), a species of the flattened umbellate type in Kükenthal's *florida* group, previously recorded from China Sea and Torres Strait. A peculiarly fine specimen has a polyparium 12.5 cm. in height, with diameters of 10.5 cm. and 5 cm., with a very short stalk 1 cm. in height, and root-like attachments of about 6 cm. The anthocodiæ show the characteristic eight double rows of spindles in chevron, with 5-7 in each row,

the uppermost projecting slightly. A feature of some interest on several specimens is the occurrence of a number of small twigs on the short stem portion almost down to the level of the stolons, each twig bearing two or three polyps.

(4) *Astromuricea stellifera*, sp. n.—A reddish, fan-like, flexible colony (14 cm. in height by 28 cm. in breadth in maximum dimensions) with very abundant anastomosis. The axis is dark glossy brown and almost smooth. The cœnenchyma is very rough. The verrucæ are crowded on all sides of the axis; they are cylindrical and their apex is fringed by about a dozen projecting spicules: The anthocodiæ are completely retractile within the verrucæ; there is a low, almost horizontal, tentacular operculum; two colourless converging spindles lie on the aboral surface of each tentacle, and there is a single or double ring at the base of the tentacles; otherwise there seem to be no spicules in the polyps. The spicules of the cœnenchyma are (1) irregular warty stars and toothed plates, (2) stout spindles with tuberculate warts, and (3) small irregular bodies—all of a rose-red colour. This species differs from the other members of the genus in many details, *e. g.* in the absence of long needle-like processes on the spicules fringing the mouth of the verruca.

Localities. Low water at Kiu Okha, and dredged off S.W. coast of Beyt Island.

(5) *Echinomuricea uliginosa*, Thomson and Simpson (1909), var. *tenerior*, nov.—The 'Investigator' collection of littoral Indian Ocean Alcyonarians includes a new species of *Echinomuricea* (*E. uliginosa*) which is described in detail by Thomson and Simpson in a memoir just about to be published. A variety of this species occurs in Mr. Hornell's collection. The diagnosis of the species is as follows:—A pinkish-red colony branched in one plane; the cœnenchyma is thick and very rugose, with spicules projecting in all directions; the verrucæ are thickly disposed, covering most of the surface; their walls bristle with the long smooth spines of projecting spicules; there is an elevated conical operculum composed of two bent spindles which touch for over three-quarters of their length, but diverge near the collaret, the interspace being almost completely filled by a short, curved, transversely disposed spindle; the horny axis is brown, cylindrical, and chambered, firm and flexible below, soft and collapsible above; the spicules include a variety of forms: (*a*) some showing a projecting smooth spine with branching warty arms

at the base; (b) spindles covered with irregular warts; (c) spindles bearing in addition to warts a number of smooth projecting spines on one side; (d) irregular forms with warty branches on one side and smooth spines on the other; (e) bifurcate spindles; (f) irregular plates with warty branches; and (g) smooth spindles in the anthocodiæ.

Locality. Laccadives (Kalpeni Bank) and Arakan coast, 13 fath.

The specimen from Cutch differs from the type in the following particulars:—It is unbranched (65 mm. in height, with a diameter of 3 mm.) ; it is more delicate in appearance and lighter in colour ; the large pointed spicules surrounding the mouth of the verruca are pink to white, instead of deep red ; the ground-colour of the cœnenchyma is white, instead of red or pink ; the spicules are more delicate and bear longer spines ; the superficial spicules of the cœnenchyma are white spindles with prominent rough warts, and reaching dimensions of 0.61×0.19 mm., while the corresponding spicules in the type are thick red spindles with short close-set warts, and of larger size, viz. 0.91×0.23 mm.

Locality. Off Dwarka, 16 fath.

(6) *Lophogorgia lutkeni*, Wright and Studer.—The representatives of this species are much larger and more copiously branched than those described in the 'Challenger' Report ; the largest specimen reaches a height of 45 cm. and the main stem has a diameter of about 7 mm. The verrucæ show eight triangular marginal lobes bent over the retracted tentacles, and it is of some interest to note that while the verrucæ of some branches stand out to a height of 1 mm., the openings on other branches are flush with the general surface of the cœnenchyma.

Locality. Off Beyt Island, 3-4 fath.

(7) *Juncella juncea* (Pallas).—Unbranched and slightly branched colonies, yellowish white (with a touch of red) to buff in colour, with very crowded verrucæ without definite arrangement. The spicules are clubs and double stars, intermediate forms between clubs and double stars, and a few single stars. We have referred the specimens to *J. juncea* rather than to *J. gemmacea* because the former is the older species. Prof. Hickson has suggested that *J. juncea* and *J. gemmacea* should be united in one rather variable species, and a study of various representatives of *Juncella* has led us to the same

conclusion. We think that *J. gemmacea* should be merged in *J. juncea*.

Locality. S.W. of Beyt Island.

(8) *Virgularia rumphii*, K lliker.—We have referred two specimens to this species, although they differ in some obvious features, which appear to us, however, to have only quantitative importance. They agree with *V. rumphii* in having close-set pinnules with crowded polyps and with peculiar interlocking on the metarachidial surface, in having very numerous undeveloped pinnules (96–120 on each side), and in many other respects. They differ in having 55–70 polyps on a pinnule instead of 40–44, in showing no distinct siphonozoids (probably because of imperfect fixing), in having a more slender axis, and so on, but they are much nearer to *V. rumphii* than to any other species. In their very numerous polyps they suggest *V. multicalycina*, Thomson and Henderson, but the calices of the latter are exceedingly well defined, whereas they are indistinct in those from Cutch.

XLVIII.—*Two new Species of Gryllacris in the University Museum, Oxford.* By Dr. ACHILLE GRIFFINI (R. Istituto tecnico, Genova, Italy).

I HAVE recently received for identification from the Hope Department, University Museum, Oxford, owing to the courtesy of Professor E. B. Poulton, F.R.S., and Mr. R. Shelford, a series of undetermined Gryllacridæ. In a memoir of some length, communicated to the Società Italiana di Scienze Naturali in Milano at its session of January 31st, 1909, I have described the African, Indo-Malayan, and Australian species of this family of Locustodea in the Oxford Museum collection. The following account treats of the only two Neotropical species in this collection; the species evidently are new to science, and one (*Gryllacris longstaffi*) is highly remarkable on account of the extraordinary structure of the apex of the abdomen, and of the external genitalia of the male.

I seize this opportunity to express my sincere thanks to Professor Poulton for permitting me to examine this interesting collection, and in particular to Mr. R. Shelford for the trouble he has taken in transmitting the specimens to me and in